Dataloger ESC8800

Datalogger ESC8800 communication protocol

Supported device types and versions

The protocol supports communication with ESC 8800 dataloggers.

Implementation was performed and verified according to the **ESC Model 8800 – datalogger Engineering Manual – TIN 97-1023, February 1997** documentation for the datalogger software version 6.

Communication includes:

Table 1

Measurement type	I/O tag type	Communication function	Documentation
Current values	AI	PRINT MINUTE	Command Response String 6 – 16, 17
Current values flags	DI	PRINT MINUTE	Command Response String 6 – 16, 17
1m averages	AI	PRINT MINUTE	Command Response String 6 – 16, 17
1m average flags	DI	PRINT MINUTE	Command Response String 6 – 16, 17
30m averages	AI	PRINT AUX	Command Response String 6 – 14, 15
30m average flags	DI	PRINT AUX	Command Response String 6 – 14, 15
60m averages	AI	PRINT HOUR	Command Response String 6 – 7, 8
60m average flags	DI	PRINT HOUR	Command Response String 6 – 7, 8
Digital inputs	DI	SENSE IN	Command Response String 6 – 9, 10
Calibrations	AI	PRINT CAL	Command Response String 6 – 12, 13
Real time – write	TOA	SET TIME	Command Response String 6 – 20

Communication line configuration

- Communication line category: Serial
- Baud rate according to the ESC datalogger settings - the command CENTRAL SPEED,
- 1 stop bit,
- 8 data bits,
- No parity,
- No handshaking.

Communication station configuration

- Communication protocol: **ESC 8800**.
- Station address is a decimal number within the range of 0..255. Station address must be identical with the datalogger settings - the command SET ID.

Station configuration is different from implementation in the versions D2000 v3.XX. There are used station time parameters and their priorities, one datalogger must be divided into logical stations as follows:

- Current values - **delay** - at least 1 second, **station priority** - 0. Current measurements of channels and digital inputs are configured on the station. Logical station with the lowest priority, the parameters delay may not be less than 1 second. Note: datalogger 8800 does not provide any current data - the data are acquired from one-minute averages. Therefore it is not necessary to create the station.
- 1m averages - **period** - 1 minute, **offset** - 5..10 seconds, **station priority** - 1. There are configured 1m averages of channel measurement on the station. Logical station with a higher priority, the parameter offset couldn't be less than 5 seconds - time for datalogger for processing values.
- 30m averages - **period** - 30 minute, **offset** - 5..10 seconds, **station priority** - 2. There are configured 30m averages of channel measurements on the station. Logical station with even higher priority, the parameter offset couldn't be less than 5 seconds - time for datalogger for processing values. The period of 30 minutes must initialized in the datalogger by using the command **SET INT 30**
,
- Calibrations – station with required period for reading calibration results.

Station protocol parameters

There can be defined the following station protocol parameters:

Table 2

Keyword	Full name	Meaning	Unit	Default value
RC	Retry Count	Poll repetition count in case of a communication error.	-	2
RT	Retry Timeout	Delay between poll repetition in case of a communication error.	ms	1000 ms.
WFT	Wait First Timeout	Delay after transmitting the poll before reading the response.	ms	500 ms.
WT	Wait Timeout	Delay between response readings till its finalization.	ms	400 ms.
MWR	Max Wait Retry	Repetition count of response readings till its finalization.	-	8
GSI	Get Stored Interval	Period, during which there are read archive data from the datalogger without interruption. The period is given in minutes. If the value of the period is e.g. 60 minutes, so there are read all archive data from e.g. June 3rd 1996 05:00 to 06:00, then from 06:00 to 07:00 etc. Loading archive data within the period couldn't take more than one minute, because there could be lost some current data acquired among archive readings.	min	10 min.
VP	Validity Percent	Valid measurements percentage for making measured interval valid.	%	67.000

String containing the protocol parameters is being defined as follows:

```
Keyword=value;Keyword=value; ...
```

Example:

```
RC=1;RT=500;MWR=10;
```

If there is used a keyword with an invalid value in the initialization string, there will be used corresponding default value according the table 2.

I/O tag configuration

Support of communication with ESC 8800 comprises acquisition and setting of the following values:

- reading current values of measured parameters with flags,
- reading 1m, 60m averages with flags,
- reading current states of digital inputs,
- reading calibration results.
- setting the real time.

Current value configuration

I/O tag type is Ai, measurement type is **ACTUAL**. Channel number is defined as a decimal number within the range of 0..99.

Configuration of current value flags

Current values flags are DI type (Digital Input). Measurement type is **ACTUAL Flag**.

Note: At defining the No missing data <blank> flag, you can use the character _ (underline) for transparency.

Configuration of 1m, 30m and 60m averages

Averages are values of AI type (Analog Input). Measurement type is **1m AV** for one-minute averages, **30m AV** for half-hour averages and **60m AV** for hour averages. Channel number is defined as a decimal number within the range of 0..99.

Flag configuration of 30m and 60m averages

Flags of averages are values of DI type (Digital Input). Measurement type is **30mAV FLAG** for half-hour averages and **60mAV FLAG** for hour-averages.

Note: At defining the No missing data <blank> flag, you can use the character _ (underline) for transparency.

Digital input configuration

Digital inputs are value of DI type (Digital Input). Measurement type is **Dig.Input**. Digital input number is defined as a decimal number within the range of 0.. 999.

Configuration of calibration results

Calibration results are values of AI type (Analog Input). Measurement type is **CAL-Ph1** for the first calibration phase or **CAL-Ph2** for the second calibration phase. Channel number is defined as a decimal number within the range of 0..99.

Real time I/O tag configuration

For each station (on logger ESC8800 physically), there can be configured one I/O tag of TOA type containing real time. The I/O tag is necessary for real time synchronisation - datalogger -> computer.

Acquisition of archive (stored) values

Logger ESC 8800 executes a local archiving of measured values. The values can be requested automatically on a dispatcher system breakdown or directly by the dispatcher (D2000 HI, D2000 EventHandler) to complete the D2000 dispatcher system archive.

The method described above allows to acquire calibration values, which are 30 day old, 30m averages for last 31 days and 1m averages for the last 60 minutes.

Literature

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Changes and modifications

- November 1999 - possibility to set a validation percentage individually for each station.

Document revisions

- Ver. 1.1 – February 8th 2000 – Document update.

ⓘ **Related pages:**

Communication protocols